Research of the tin droplet generator and plume expansion of laser produced tin droplet plasma

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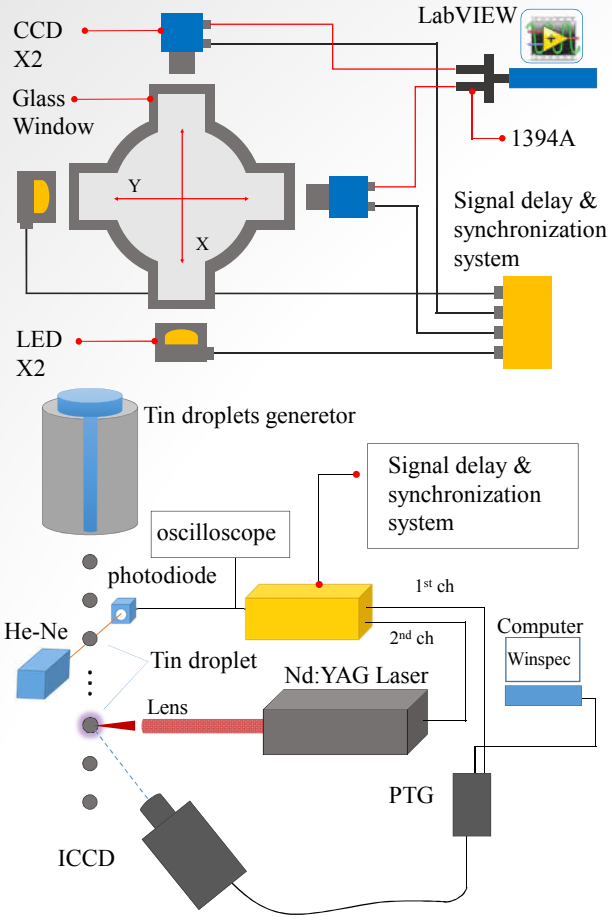
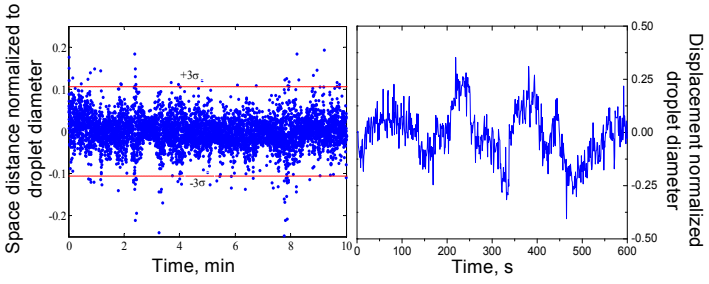
Introduction

A monitoring system has been developed to investigate the spatial stability of the tin droplets. The tin droplets generated by a self-made tin generator present a suitable spatial stability for the synchronous laser irradiation. of plasma are acquired by an ICCD under different laser irradiances.

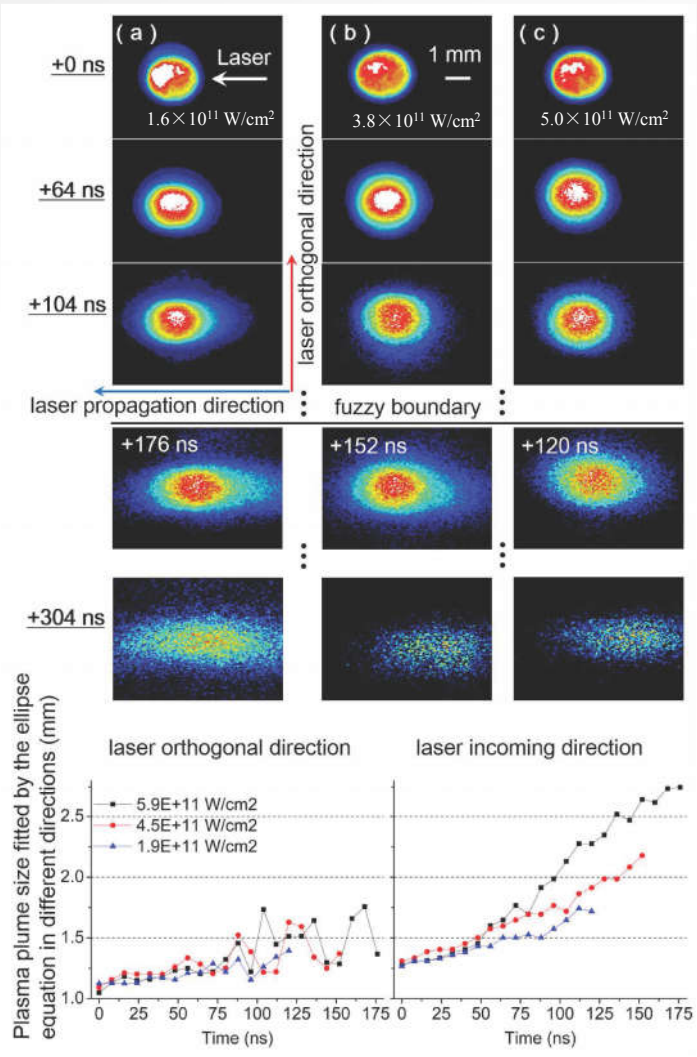
Experimental



Results and Conclusions

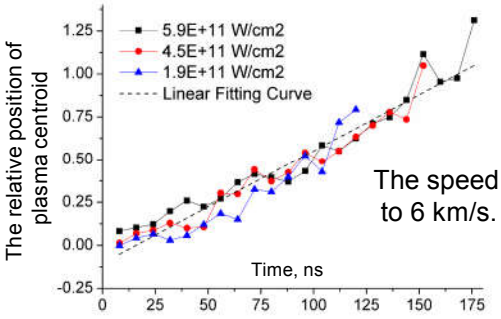


Tin droplet diameter is about 180 um. The droplet to droplet is 2.5droplet diameter. The lateral displacement is less than 0.5droplet diameter. Thus, pulse laser can accurately irradiate the droplet.



Plasma expands faster in laser incoming direction than in laser orthogonal direction. The plasma boundary can be fit by an elliptic equation. The expanding velocity of plasma are estimated to 4.5~9.5×10^3 m/s in laser incoming direction and 2.0~2.8×10^3 m/s in laser orthogonal direction.

The moving velocity of plasma centroid is independent of laser irradiance.



The speed estimated to 6 km/s.

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